The Ramtop

Late Fall   1996

ZX-81 Software   Internet E-Mail
QL & Dayton Show Reports
Pure Angst   Ping of Death

Q-SAVE AND ANSWERING MACHINE TAPES

by Zachary Kaczor

Q-Save is a utility for the ZX-81. It speeds up the loading time of a program by about 14 times. My brother Adam and I demonstrated Q-Save at the April West side meeting. This is how it works: first you load in Q-Save, (this takes practically no time), then NEW the program (this won't erase Q-Save because it's stored above ramtop). Next load in your program, break it, type PRINT USR 8683, then start your tape recorder and hit ENTER. Your program will now be saved at least six times faster than a normal cassette save. To make sure you had a successful save you can verify it by typing PRINT USR 8677 and loading in your Q-Saved program. The length of the verifying time depends upon how long your program is. If the screen says "V=)" then you have had a successful save, but if V equals anything but zero, your save didn't work.
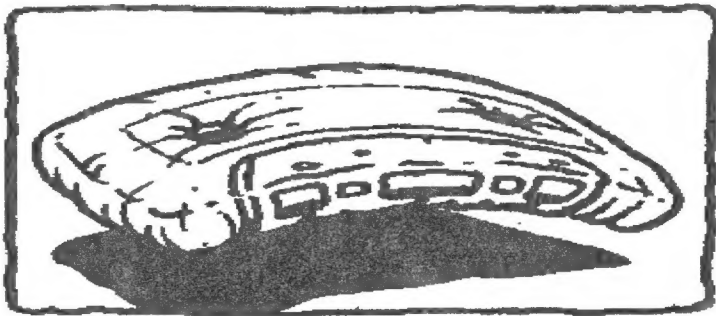
We got the Q-Save program at the Timex computer fair in Milwaukee, Wisconsin. The man selling the program said that he couldn't get Q-Save to work. The Q-Save came with a filter amplifier and the Q-Save software on cassette. So we bought the package just for the amplifier. We decided to try Q-Save and after some hassle, got it working. At Just Closeouts, there were selling 30 second (out-going) answering machine tapes for 39 cents a piece. Since the tapes are continuos loops, we'll never have to rewind them. In fact if you do rewind them, you'll screw up the whole tape and any program that's on it. So we wiped them out of tapes. We found that the Q-Saved programs fit on the tapes perfectly . So far we haven't had one program

that didn't fit on the tapes.

Since the April computer meeting we've added a Static Ram Board to the computer. It holds the Q-Save program in memory at the 8-16k region. Since it's battery backed up, when we turn on the computer we already have Q-Save loaded in. Now all we have to do is put the Q-Saved program in the tape recorder, type PRINT USR 8671. wait about 30 seconds and Viola, your program is running. It's like a poor man's disk drive.

Editors Note: Zak's demonstration of this program with the answering machine tapes showed that this combination makes a very attractive addition for the ZX-81, rather like a full size microdrive. For anyone using that machine, this is a highly desirable combination. If anyone knows where this program is available from please let us know. This is Zak's first article for the Ramtop and we hope he will write many more.

QL FOR THE MAC

Bill Cable called Jon Kaczor recently to see if there would be enough interest to have a Sinclair Show in Bedford, PA (about an hour from Pittsburgh). We could help by calling around the Sinclair community and see if there was enough interest to consider going ahead with the project. Cable did indicate that many European QL vendors would be interested in doing another show in the States. How many vendors could be offered to TS1000 & 2068 users is uncertain but the Z88 would be supported by FWD Computing (Frank Davis) and Bill Richardson form England.

Our annual Christmas Party and Auction will be at the Euclid Square Mall in the Euclidian Room the first Friday of December starting around 7:30. Be There!

Daniele Terdina (e-mail: sistest@ictp.trieste.it) reports that the QL emulator for the Mac has now an official page on the World Wide Web at the following URL:
http://www.geocities.com/SiliconValley/
Heights/1296/q-emulator.html
Thanks for the information, Daniele.

Juno, E-mail Provider

Juno offers free e-mail, if you don't mind looking at their advertisements on your screen as you do e-mail. They have toll free numbers and in some areas, local numbers. I was thinking that some of the folks who don't have a local provider might be able to use Juno for E-mail, and cut down on the AOL bill... Anyway, if you're interested, read on...

1. What is Juno?

Juno is a completely free Internet e-mail service. You can use Juno to exchange e-mail with anyone in the world who has an Internet e-mail address, and because the service is advertiser-supported, you never have to pay Juno anything.

To use Juno, all you need is a PC equipped with Microsoft Windows and a modem. They give you the software you need and provide a local or toll-free telephone number for your computer to dial into.

2. When will Juno be available?

Juno is now in the first phase of its controlled national roll-out. To ensure that the deployment of Juno's computer systems and telephone network keeps pace with the rapid growth of its member base, they are filling requests for the Juno software in a controlled fashion. For the next month or so, only a limited number of copies of the software will be sent out each day.

3. Is Juno really free?

Yes. It's a little like network television. You don't have to pay CBS to watch the nightly news, or NBC to watch "Seinfeld". This is the way it should be with e-mail as theyll. Juno charges no monthly fees, no hourly fees, no membership fees, no per-message fees, and no fees of any other sort. The sponsors pay, so you don't have to.

And unlike other online services, Juno's free offer doesn't go away after five hours or ten hours or sixty hours, and it isn't contingent on your buying anything.

It's not a free trial. It's free, period.

4. What about phone charges?

When you use Juno, your computer communicates with the central computers over your telephone line. Hotheyver, even if you're not in the same state they're in, it won't be necessary to dial a long-distance telephone number to reach us. Most of their users will dial into one of the several hundred local telephone numbers provided. In places where no local access number is available, you'll be able to dial into Juno using a toll-free number.

5. How can I get the software?

Call 1-800-654-JUNO. they'll take your name and address and send you a free copy of the Juno software as soon as it is available. Or you can e-mail your name and address to signup@juno.com. Or check the theybsite at

http://www.juno.com/

6. Can I make copies of the software for my friends?

Absolutely. Once you have the Juno software, they encourage you to copy it as often as you want and give copies to as many people as you think might be interested. The more people you know who have e-mail addresses, the more useful e-mail is to you. By giving Juno to your friends (or your family, or business colleagues), you also help keep member acquisition costs low. This is important, since it means they can devote more resources to keeping e-mail for free for everyone.

7. What features does Juno have?

Juno has a point-and-click interface that has been designed to be easy for anyone to use, even if they've never used a computer before, as theyll as full-featured enough to satisfy experienced computer users. In addition to the basic features that all good e-mail services offer (such as tools for replying to messages you receive, forwarding messages you receive to someone else, and printing out copies of messages),

Juno also offers:

- *a spell-check function*
  - *an address book which can automatically store the addresses of everyone who sends you e-mail*
  - *customizable mailing lists o customizable folders for saving your e-mail*
  - *your choice of your own e-mail address (so you can be 'john@juno.com' rather than something like'12345.678@domain.com')*
  - *the ability to personalize Juno to use the font and colors you prefer*
  - *the ability to create accounts for multiple users on the same computer from a single copy of the Juno software*
  - *technical support, in case you have difficulty connecting for the first time*

These are only some of Juno's features, of course, and they'll continue to add more as needed.

8. What computer hardware do I need?

You need to have a PC-compatible computer (either a 386, a 486, or a Pentium) that is equipped with a 2400-baud (or faster) modem (9600 recommended). You need to be running Microsoft Windows version 3.1 or higher. (Windows95 works fine.) You also need to have 4 megabytes of RAM and 15 megabytes free on your hard drive, and you need to have a mouse.

9. What types of computers does Juno run on?

Juno runs on all PC-compatible computers that are equipped with a modem and are running Microsoft Windows. You can also use Juno on computers running the OS/2 operating system if you use the OS/2 Windows emulator, and on Macintosh computers that are running the SoftWindows Windows emulator. They don't recommend that you run Juno under an emulator, though, since Juno's performance may suffer.

10. Will you have a Macintosh version of Juno?

Not right away, but they do plan to develop one in the future (having heard from hundreds of Mac owners who are eager to use Juno). Once the launch of the PC version of Juno is complete, we plan to start work on the Mac version.

11. Where can I use Juno from?

You can use Juno from anywhere in the continental United States, as theyll as Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Today, there is no international version of Juno for use by people outside the United States, but in the future they may make Juno available in other countries. Note that if you are using Juno in the United States you can exchange e-mail with people anywhere in the world. It's just being a Juno member -- not communicating with Juno members -- that is limited to the U.S.

12. Who can I send e-mail to? Just other Juno members?

You can send mail to anyone in the world who has an e-mail address.

13. Does Juno give me Internet access?

Your messages will go out over the Internet, meaning that you will be able to send mail to and receive mail from anyone on the Internet or any of the commercial online services (such as America Online, CompuServe, and Prodigy). However, your computer will not be connected directly to the Internet, and Juno can't be used for online activities other than e-mail, or "surfing" the World Wide Web.

They believe that e-mail is the only fundamental and indispensable tool in the online world. This is borne out by the fact that there are millions of people who use the Internet regularly for e-mail but never for anything else. they may offer other, more specialized services at some point, but for now they're focusing on providing the one Internet tool that everyone needs -- e-mail -- completely free.

14. Do I need to already have Internet access to use Juno?

No. Juno gives you everything you need to send and receive e-mail over the Internet. All you have to do is install the software and then dial directly into the central computer with your modem.

15. Can I use Juno through my existing Internet account?

No. To use Juno, you have to get a copy of the custom software they've developed and then dial into the central computers with your modem. However, they'll be glad to send you the software for free, and they're confident that you'll find it easy and pleasant to use. If you're one of the millions of people who use their Internet accounts solely for e-mail, you might find that Juno fills all your needs, in which case you'll be able to cancel your other account and stop paying your access provider's monthly bill. Even if you use the Internet for purposes other than e-mail and decide to keep your other account, they hope you'll get your e-mail through Juno, since that allows you to save your costly online hours for other activities and to keep your e-mail address when you switch from one access provider to another.

16. Can I use Juno over ISDN?

Today, Juno does not provide, or operate over, ISDN connections. However ordinary telephone modems are adequate for using Juno, since you only connect to the central computers for the relatively brief period of time it takes to download or upload your mail (along with any advertising they want to show you). You read and write your messages off-line, and your messages are stored on your own computer; this means that you can access these messages more quickly than over any telephone connection, even an ISDN connection.

If you have an ISDN line and wish to use Juno, you can do so by hooking up a standard analog modem to an analog port provided by your ISDN equipment.

17. What will the advertising be like?

Advertising is necessary to Juno; it's because they carry advertising that they can afford to provide you with e-mail for free. However, the goal is to make the advertising on Juno different from the advertising you typically see in other media, in ways that should make it more palatable to the members and more valuable to the advertisers.

When you create your Juno account, you will fill out a "Member Profile" that will help us determine what

subjects you are interested in, what advertisements to show you, and what new services you might like to see. Not all Juno members will see the same ads: a parent of a young child might see an ad for diapers, while an avid skier might see an ad for winter vacations. the goal is to provide their members with information that interests them and is relevant to their needs.

In addition to being "targeted" in this way, the advertising on Juno is designed to be visually appealing and interactive, and to not interrupt what you are doing. Most of the ads on Juno will take one of two forms: "banner" ads, which are displayed in the upper right-hand corner of the screen while you read and write your e-mail, and "showcase" ads.

They may also experiment with other types of advertising, but they will be careful not to let the advertising become overwhelming or a nuisance. they plan to test a variety of approaches and figure out, from people's reaction, what works best.

18. How can I advertise on Juno?

If you would like to find out about advertising on Juno, call Arlene Villareal at 1-800-267-JUNO (1-800-267-5866) or send e-mail to advertise@juno.com. A member of their advertising team will get in touch with you.team will get in touch with you.

19. What will you do with the information in my member profile?

Your Member Profile consists of your answers to roughly 20 questions about your tastes, preferences and interests (as they'll uses certain standard demographic traits). They collect this information to help us select which advertisements to show each of their members. Using the information in this way does not involve sharing the information with their advertisers or with any other party.

Juno appreciates their Members' concerns about privacy and will treat the Member Profile data they collect with care.

20. Will my Juno account be private?

Yes, it will -- they don't read the e-mail messages their

members send and receive (and don't intend to, barring extraordinary circumstances such as being required to do otherwise by law). It is up to you, though, to select a hard-to-guess password and then to keep it secret, since if someone else knows your password it may be possible for him or her to gain access to your account. If, for the sake of convenience, you choose a password that is easy to guess or select the option of having your computer automatically enter your password for you when you use Juno, your account may be somewhat less secure, and potentially less private.

21. Should I be worried about contracting a computer virus when I send and receive e-mail through Juno?

No. Computer viruses are not transmitted through ordinary text e-mail.

22. Can my business use Juno as its e-mail service?

Juno is designed to operate on a single computer equipped with its own modem. they do not have a version of Juno designed to operate on an internal computer network of the sort you find in many companies (though they may develop such a "Juno Pro" version in the future). If your employees each have an individual PC and a modem, Juno may well suit your needs. Large companies and companies running local-area networks will do better with a system designed specifically for their needs.

If you would like to create a Juno account for use in business, you should feel free to do so. One way to set this up is to include both your own name and your business' name in your e-mail address. For instance, if your name is John Smith and your company is called "Acme", you might select the e-mail address "smith.acme@juno.com".

Editors Note: After trying Juno out I found a couple of problems. The first was with the disclaimer which opened you up to any type of solicitation, not just the on line type. The second was that Juno was not able to install on a system that had a stacked drive. No doubt system resources theyre strained by the TSR. It does merit further investigation.

Notes from Cyber-Space

Due to technical problems, Steve Johnson of S.J.P.D Software decided not to send their catalogue out but wanted to let their friends know that the S.J.P.D. SOFTWare WWW page and updated catalogue has been sent to Di-Ren and should be available from **http://www.di-ren.co.uk/sjpd/homepage** as of Sat. 25th October 1996.

The S.J.P.D. catalog has lots of QL programs, PC stuff as well as hard to find programs for Z-88 listed. You may contactat S.J.P.D. SOFTWare by writing to Steve Johnson, **101325.2750@compuserve.com** .

How many of our users have web pages now? Perhaps we should make a compilation of web pages by Sinclair Users Past and Present. We should also publish an updated member list for distribution. Perhaps this is a bit optimistic since our membership is now quite small.

Now about the Annual Christmas Auction. It will be held as usual on the first Friday of December which will be December the 6th, at 7:30 at Euclid Square Mall in the Euclidean Room. There will not be a West Side Meeting that month. We need to make preparations for the meeting and make sure that former members and others are notified about it. Please call as many people you are still in contact with as possible and provide the information to the Cleveland Computer Society. With enough people attending it is always a good time.

The prices on PC's are coming down again and I have started to see machines with dual CPUs on the market now. Memory is the cheapest it has been in the past fifteen years. So now may be a good time to upgrade your machine or work on the 2068 memory board project.

The North American QL Show in Bedford Mass.

By John Kaczor.

I attended last year's QL Show in Oakridge Tennessee and was quite impressed. I had taken my family to the show and we made a vacation out of it with stops in Mammoth Cave and Ft. Knox Kentucky and a stop in Newark Ohio to visit with family.

I learned about the Bedford show in early spring but I despised my chances of going because it would involve a long drive by myself (my sons were still in school and would not be able to come).

When Gene Wilson called and suggested we could go down together and split the driving and the expenses I was delighted and agreed whole heartily. Arraignments were made and the day of the trip finally arrived.

Gene and I took our time driving to Bedford. We left early Thursday afternoon and stopped at a motel in eastern New York that night. The next morning we got a early start and arrived at the Ramada Inn in Bedford about 2:00pm on Friday May 17th. We checked in and got lunch and then walked about for a while. I was getting on the elevator from the parking garage and heard someone with a decidedly English accent. It turned out to be Robin Barker of Di-Ren.

We made our introductions and he announced that his luggage had been lost on the flight overseas and he didn't know if it would arrive in time for the show (if it arrived at all). In fact his bag did not arrive and he borrowed equipment from Frank Davis to show off his Amadeus Interlink and Ama Sound at Saturday's show.

Friday evening a number of QL enthusiasts had diner at a small inn in Concord Massachusetts. The specialty of the house was a dinner consisting of two whole lobsters for $16.99 (incredible).

On Saturday morning the show took place in the Ramada Inn. The show was great if somewhat sparsely attended. Opportunities to spend money abounded. Vendors included Robin Barker of Di-Ren, Frank and Carol Davis of FWD Computing, Bill Cable of Wood and Wind Computing, and Jochen Merz Software. Talks and demonstrations were given about every 45 minutes. Tony Firshman of TF Services talked about his Super Hermes board. Stuart Honeyball of Miracle Systems explained about Bob Dyl's heart attack, the demise of IQLR and the publication of QL Today to replace IQLR (This was news to me. I had been expecting to see Bob at the show.)

Various other demonstrations were given by: Dietrich Buder - Fractals on the QL; John Imperezelli and Don Walterman on their Sinclair Bulletin Board, QBOX USA (a very informative demonstration); Albin Hessler - Cueshell and QPC, the software only QL emulator for the PC; and Tim Swenson gave a talk on the QL on the internet.

The show ended all too quickly and everyone adjourned to their rooms to get ready for a banquet in a large dinning room of the hotel. The dinner was quite good as I recall and afterwards there was a panel of experts to answer questions delivered from the floor. The panel included Jochen Merz, Stuart Honeyball, Tony Frishman, John Imperezelli, and I believe Tim Swenson. After the question and answer period, a sing-a-long was conducted by Al Boehm and his wife Dorothy and Mary Cable. At first I thought 'How hokey!' but actually it was quite fun.

Sunday morning after a leisurely breakfast Gene and I pack up checked out of the hotel and drove to Al and Dorothy Boehm's house for a little get together. Many of the people who attended the show took the opportunity to prolong the weekend and accepted Al and Dorothy's gracious offer. A number of QLs were running in various rooms and at one time some of the best minds in the QL community were united in trying to solve a problem that Herb Schaaf was having in getting Jonathan Hudson's communication program 'QTPI' to run on his QL.

Eventually they determined that QTPI needed a Hermes chip in the QL in order to run. Gene and I left shortly after noon and made the drive back home that day. We ran into Frank and Carol Davis on the road and after some shouted instructions met at a rest stop for a quick dinner. After dropping Gene off I arrived home about 2:00 am. It was a great weekend.

Many thanks to Al and Dorothy Boehm and Bill and Mary Cable, Gary Norton and the folks from NESQLUG who put on a great show. If I failed to mention anyone's name I apologize.

Albin Hessler commented to me on Saturday that generally after the European shows people just leave. He was impressed by the friendly atmosphere about this QL Show in Bedford and so was I.
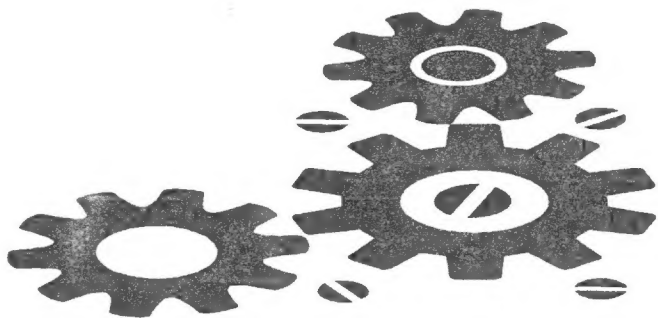
Ramtop

TheDaytonComputer-Fest

I was one of the lucky ones to make the Dayton Computer Fest this August. I will have to tell ya, their planning gets worse every year.

Last year they sent notices about a week ahead. This year there was no notice at all. On top of that, their web site did not work worth 2 cents. It was good enough to at least get the true dates as to when the event actually took place. In any case, the fest was a great success. It seemed that most of the same venders were there as was last year.

Let me tell you, the CDs floweth over! Just a few years ago, you saw a few CDs and the disks floweth over. Now disk based software is pretty much out and CDs are IN! I'll admit, CDs do install very quickly. The only problem is, what if you don't have a CD drive? This is still the norm for a notebook computer. Many of them have CD drives but most do not.

There were plenty of bargains if you were willing to look around. I was not looking for a lot of things. I was told by the "better half" that I better not spend much cash if I wanted to live to go to the next show. Well, as usual, I spent too much but what else is new? I was looking mainly for some tools (cheap), a couple of cases, a PS-2 mouse and PS-2 track ball and a few other things.

One thing that was a disappointment was that a couple of our members purchased new OEM full WIN-95 operating systems only to find that they could not use them. They would not load on their machines.

The best they could come up with is that neither of them have an IDE interface for their CD drives.

This year I went with Jon Kazor. As we entered the show, I said to Jon; "Have you ever seen so many geeks in one place?" He got a kick out of that. We then made a bee line for the Quanta table. We were happy to see our friends Paul Holmgren and Frank Davis. Many of our usual Sinclair friends were there but the Sinclair community is getting smaller each year. The Dayton computer fest committee didn't help much since they split up the Sinclair tables. Many of us have gone to PCs but still remember our roots. We once again had dinner at Tim Swenson's house. This was a high point for me. Tim has had a cook out at his house for years now. We were very sorry to hear that Tim and his family are moving out west. Of course we all wish him and his family all the best!

Now, back to the show. I found Mendelson's was there in a BIG way! I found the cases I was looking for. I picked up a thousand disks for 17 cents each. (High quality DSHD, formatted) I found the tools I needed. I also picked up a few CDs also.

MY FUN EXPERIENCE WITH TOSHIBA AND MICRO CENTER

by James G. DuPuy

Last May 20th I ordered a Toshiba Tecra 710CDT notebook computer. Now please note that this is a top of the line model and cost a fortune! ($6,000) I also ordered a T1000e Colorado tape backup (Parallel version) and Microsoft Publisher. I got the program and the tape unit about a week before the computer. I did tape backups on my older Compaq notebook and my old 286. It worked flawlessly. I got the new notebook and was in awe of how much faster it was and how much nicer the screen was and how great the sound was and so on. I also did a tape backup after loading my internet software and a viewer program. All seemed fine. At about a month and a week, I tried to do another tape backup. Well to make a long story short, it did not work. The computer recognized that a drive was there but for some reason would not talk to it. I had noticed a couple other odd things but did not realize that they were problems yet.

I called Toshiba and they prompted me through checking device drivers and so forth. (I had already check most of that) but could not get it going even after reloading the software. They advised calling HP Colorado Systems. I called them and got about the same thing. They could not figure why it would not work. They called me back about a week later. They had conferred with Toshiba and still could not come up with a real reason why it would not work. We tried changing the ports, and IRQs and so forth. Still no luck. This was a Thursday. I used the computer Friday and Saturday morning. Saturday night, it died. It would work in DOS but not WIN-95. I Called Toshiba. They recommended that I take it to Micro Center. They logged it in. They checked it out in 9 days. They had told me there was a 6 day lead time. They found that the hard drive was defective. It took them another week and a half to get the hard drive. They put it in and then felt I should pick it up.

When I had delivered the computer, I had also delivered the tape backup. I had told them I wanted them to restore the computer and find out why the tape backup would not work. Micro Center is an authorized dealer for both Toshiba and HP. The service department did not want to restore the software. They expected me to purchase a new full Win-95 and do this myself. Needless to say, I told them they better just restore the computer and don't give me any grief over it. They claimed they tried to get hold of Toshiba when in fact, they called a Toshiba parts depot. They would not send them the software. I called Toshiba and after several calls, I finally got hold of someone that sent the Win-95 CD and the Toshiba pre-installed software and utilities CD. I delivered these to Micro Center. They took another week or two to do this. I found out that 1-They did the most minimal install possible and did not test everything at all. They had no idea why the tape drive would not work. At that point it was obvious that the technicians did not know anything about the Tecra series of computers.

Micro Center had the computer 2 days short of 2 months. Now the story gets better. I was so disgusted with Micro Center that I brought the computer home and set on the table and didn't look at it until the next day. I started reading the report that the technician made. I was shocked to see that they had on the report that there was a crack on the right side of the upper case! This was not on my receipt when I delivered it. I had checked it over carefully as well as the person accepting the computer. Nothing was pointed out or said about a crack then. I looked it over and sure enough, there was a crack that had not been there when I delivered it to Micro Center. I was really HOT! I called Micro Center and confronted them about this. They did not even deny it. They said they would put a new top cover on - no problem.

At this point, I was so mad I called Toshiba again and told them they better make the damn this NEW and fast! This took several more phone calls but I finally got hold of the 2nd in command in the customer relations department for Toshiba. They sent me the Fed Ex numbers and it is now at a repair center that does primarily portables and Toshiba in particular. It has been there for going on 2 weeks now. They promise I will get the computer back this week. In 2 days it will

be 3 months I have been without the computer. After this experience with Toshiba and Micro Center, I still can't believe the incompetence and the treatment I have received. I certainly will NEVER purchase another Toshiba computer and NEVER go back to Micro Center for service or to purchase anything! I would advise all of you to think hard and long about purchasing from Micro Center or Toshiba.

Make sure you get a good warranty in writing and get a good extended warranty. This means make darn sure you have in writing the turn around time if you need service or if it requires a lengthy repair time that you can get a loaner.

Ping o Death

OR HOW TO CRASH YOUR OPERATING SYSTEM!

by Mike Bremford
,http://www.sophist.demon.co.uk/ping/

last updated 25-10-96, 1330GMT

1. The Problem

The first I heard of this was from a message on the linux-kernel mailing list. It's very easy to exploit - basically, some operating systems don't like being pinged with an extremely large packet - greater than 64K (as opposed to the default 64 bytes). Apparently, an IP datagram greater than 65535 bytes is invalid, but possible to create and send. (Thanks to Bill Fenner for this info) *Note:* Most decent implementations of Ping won't allow users to send such a ridiculously invalid packet. Of course, the ping supplied with Windows '95 and NT4.0 will send one quite happily.

Note: '95 and NT are certainly not the only culprits. Some people have done this with Solaris, others with Win 3.11 using Microsoft TCP/IP 32 v3.11a

1.1 A far better explanation of the problem. ie. Background Information on ICMP ECHO ("ping"):

IP packets as per RFC-791 can be up to 65,535 ($2^{16}-1$) octets long, which includes the header length (typically 20 octets if no IP options are specified). Packets that are bigger than the maximum size the underlyling layer can handle (the MTU) are fragmented into smaller packets, which are then reassembled by the receiver. For ethernet style devices, the MTU is typically 1500.

An ICMP ECHO request "lives" inside the IP packet, consisting of eight octets of ICMP header information (RFC-792) followed by the number of data octets in the "ping" request. Hence the maximum allowable size of the data area is 65535 - 20 - 8 = 65507 octets.

What causes my machine to crash from this?

Note that it is possible to send an illegal echo packet with more than 65507 octets of data due to the way the fragmentation is performed. The fragmentation relies on an offset value in each fragment to determine where the individual fragment goes upon reassembly. Thus on the last fragment, it is possible to combine a valid offset with a suitable fragment size such that (offset + size) > 65535. Since typical machines don't process the packet until they have all fragments and have tried to reassemble it, there is the possibility for overflow of 16 bit internal variables, which can lead to system crashes, reboots, kernel dumps and the like.

2. How to test if you're vulnerable

Unfortunately, this bug is really easy to exploit. Users are already trying it out "just to see if it

worked". Although I'm in mixed minds about passing on information on how to take out a machine, I feel this problem won't just go away, and the information on how to exploit this is already out there.

So, to test if your machine is in danger, find a Windows '95 or NT 4 box, and run the following

ping -l 65510 your.host.ip.address

If the machine you pinged dies, you're in trouble. Disturbingly easy...

• Now, those of us without access to '95 or NT can crash machines too - go there for the source code to an evil implementation of ping.

• Apparently, the ping command on Linux can be rebuilt with a higher package size limit in the ping source, and used to whack machines too. Remember, Linux Ping must be run as root. *Note - I've tried this and can't make it work...*

• I've also been given a pointer which is "a generic tool for testing the robustness of IP stacks. It includes tests which try to exploit many different problems." It sounds like it would probably identify this ping problem, plus any others lurking in your networking code.

• If you're having trouble reproducing this, try loading the machine up. Although it's hard to tell, it seems that a nearly idle machine is more likely to withstand the "Ping O'Death" than one which is busy/swapping/otherwise earning it's living. This is possibly due to a memory overflow being more likely to hit something important if the machine is busy... any thoughts anyone?

Editors Note: I tried this pinging on a machine running windows 95 and it does happen. This bug in many of the current systems probably will be exploited by bored teenage hackers. But don't worry QL's haven't been targeted yet!
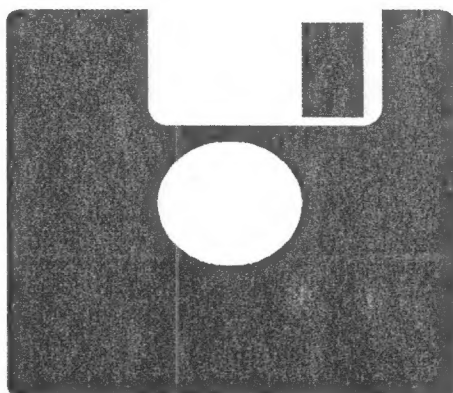
High Speed Telecommunication

Recent developments have brought about the very real probability that 28.8 will soon be a discarded standard. On more than one front will this limit be surpassed. The recent introduction of Warner Cable's Road Runner Service which will make available a fiber optic connection for the average user which will rival a T-1 hookup (about 1.544 Mbps). At $40. per month it is still a little pricey for the average user but to businesses or the obsessed hobbyist it is a tremendous value.

Taking a different approach, Rockwell Semiconductor has developed a technology that uses the existing telephone network. It works by viewing the telephone network as mostly a digital network rather than an analog system which is the operating idea behind V.34 modems. They have announced a speed of 56 Kbps for this system. It works by considering the analog part of the system, the connection between the telephone company's central office and the home as an impaired section of the network. The high speed is obtained by equalizing voltages and creating an essentially asymmetrical modem which has higher data rates transferring from the service provider than in the other direction.

This technology will utilize standard wiring and must have the same type of modems at both ends to work. They have to be able to identify each other as a 56 Kbps connection. There should also be a digital modem at the central site connected to the network preferably a T-1 connection and lastly there should be no conversions of the digital signal like AT&Ts True Voice system. Never the less this technology represents a significant improvement in speed which should be available very soon. US Robotics is rumored to have one such modem already in production, and this is probably very likely as 14.4 modems drop to the under 25 dollar category. Get ready for the future now!

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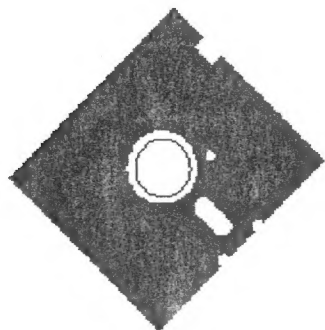|	
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The Ramtop
4568 Williamston Ave.
Brooklyn, Ohio 44221